

# La Niña to dominate this winter

By GREG SOULJE

**L**A Niña conditions are characterized by unusually cool ocean temperatures in the equatorial Pacific Ocean. Cooler ocean water in this region shifts the strength and position of the upper air levels and jet stream. This upper-level flow is responsible for track and movement of weather systems from the Pacific eastward through the continental United States.

The La Niña pattern, now under way, led to one of the quickest and earliest completions of harvest in recent memory throughout much of the heartland. Less precipitation and a lack of frequency of rain-making systems also resulted in a reduction of soil moisture levels from the central Plains to the Ohio Valley and points southward until last November.

La Niña, now in a moderate category, will further increase in intensity through the remaining winter months. There is some speculation that this La Niña will last well into the spring season, suggesting a colder, drier pattern from the Plains eastward. More on the consequences of La Niña on spring weather patterns will appear in later issues.



### Key Points

- La Niña, now moderate, will increase in intensity this winter.
- Jet stream shift means warmer temperatures in some areas.
- Look for an active precipitation pattern in many regions.

### General forecast

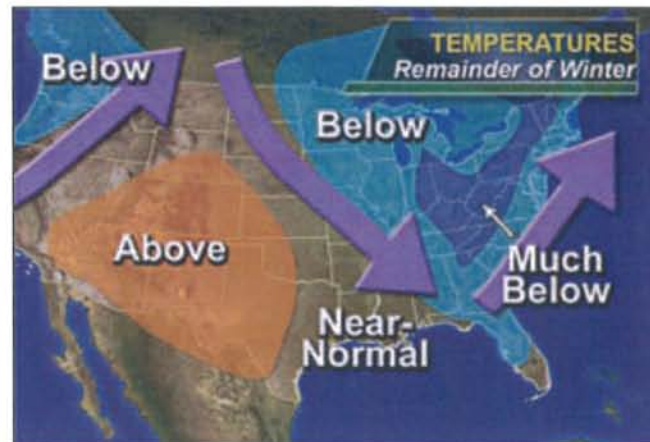
As for the winter outlook, in general and in response to a strengthening La Niña, a more significant shift of the jet stream northward into northwestern Canada will generate milder-than-average weather in parts of the Southwest. Meanwhile, temperatures will average below to well below normal throughout the nation's heartland and in most if not all areas of the East and Southeast. A rather expansive area of wide-ranging temperatures will be found across the northern Rockies and High Plains.

The precipitation outlook for much of the winter, again driven by an intensifying La Niña event, suggests an active pattern for the far Northern Plains, upper Midwest, Great Lakes region, the Northeast and New England. Frequent storminess is also forecast for the Pacific Northwest. Drier-than-usual weather is forecast across much of Southwest, the central and southern Rockies and parts of the High Plains.

### Midwest, Great Lakes

Across Wisconsin, Illinois, Indiana and Ohio, the challenging winter weather pattern now under way will continue, especially regarding cold air outbreaks. The past couple of winters, arctic outbreaks were few and far between. This will not be the story for 2011. Temperatures will range from below normal to well below normal, but with some fluctuations from the upper Mississippi Valley to the lower Ohio Valley.

As for precipitation, normal to somewhat above-average fre-



quency and amounts of snowfall are in the offing across the northern and far eastern Great Lakes region and the associated regions of the Corn Belt. Sizable snow totals are foreseen in the usual downwind areas of the lake-effect snow belts. Meanwhile, over the remainder, a trend toward drier-than-usual conditions (less snowfall) will develop through mid- and late winter.

### Great Plains

As for the Dakotas, Minnesota, Kansas, Missouri, Iowa and

Nebraska, a rather challenging winter season will continue, especially in what has been a cold, active pattern so far. While there will be bouts of a more seasonal type of cold, as well as short-lived thaws, they will be uncommon, and most likely will occur from the Missouri Valley westward.

Do look for a drier weather pattern mid- or late-winter — except from the Missouri Valley north and eastward, where a frequent winter storm system will continue.

While a significant snow cover insulates winter wheat regions to the north and northeast, there will be a need to monitor central and Southern Plains locales due to a lack of long-lasting snow cover. These same areas also may see a softening or early-season thawing of soils, which may lead to topsoil dryness issues come spring.

### South

Elsewhere across the nation, early in the season, colder-than-average temperatures are expected across the Deep South, Southeast and Mid-South regions — from southern and eastern areas of Texas, east-northeast through the Mid-South and South, and on into sections of the Carolinas and Virginias.

As for precipitation, there'll be plenty of it, especially east of the Delta and particularly in the Southeast and Mid-Atlantic regions. Dry and droughty areas that showed some improvement this fall may experience worsening winter soil moisture levels, from the lower Mississippi Valley westward. Farther north, prospects for additional soil moisture improvements look minimal across the Tennessee Valley and Mid-South.

### Northeast

Upper-level winds forecast to frequently ride in from the Northwest and down through the nation's midsection will turn in from the southwest across the western Atlantic Ocean. As a result, very cold to bitterly cold air masses are forecast to swing into the northeastern third of the nation, resulting in numerous cold waves.

As for precipitation, normal to above-normal amounts, including snowfall, are ahead. Frequent intrusions of cold across the lower Great Lakes region also will generate spells of heavy to excessive lake-effect snowfall.

### Northwest, West

The Pacific Northwest and the northern Rockies will see frequent outbreaks of cold weather for the balance of the winter. Cold weather-related stress issues for livestock and ranching operations will abound. Temperatures may show a trend toward moderation later in the season.

As for precipitation, above- to well-above normal amounts are expected. One benefit to the abundance of snowfall will be a forecast of adequate to surplus levels of runoff moisture come springtime.

In short, La Niña's influence on the movement and direction of weather systems across the nation will dominate the next several months. Looking ahead, producers from the eastern Plains and Midwest to the Eastern Seaboard should be prepared for ongoing bouts of cold weather well into early spring. A drier trend in all but the northeastern quarter of the country may continue, as well.

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## Farming in a changing environment

**A**S temperature and carbon dioxide levels in the atmosphere increase, growers may see things pop up on their farms that they haven't seen before, according to Lewis Ziska, a USDA Agricultural Research Service specialist in crop systems and global change in Beltsville, Md. Unfortunately, they won't all be good.

In a session on climate, carbon dioxide and invasive weed species at the 2010 AGMasters Conference at the University of Illinois, Ziska discussed how rising carbon dioxide levels and increasing temperatures may cause invasive weed populations to change.

"Carbon dioxide provides the raw material needed for plants to grow, and as it increases, plant growth will be stimulated," he notes. "Carbon dioxide is not a smart molecule — it can't distinguish between crops and weeds. So with increased growth of crops comes increased growth of weeds, as well."



**MORE WEEDS:** More carbon dioxide promises an optimal growing environment for both crops and weeds.

Ziska is studying how rising carbon dioxide and warmer temperatures alter the establishment and success of invasive and noxious weed species such as kudzu and Canada thistle. These weeds can result in widespread environmental or species degradation.

And as winter temperatures warm, kudzu, often referred to as "the vine that ate the South," is migrating northward. This could become problematic for the Midwest because kudzu is a carrier for Asian soybean rust and can serve as an alternative host for this pathogen.

On the positive side, Ziska says plant breeders could start selecting among crop lines for a greater yield response to carbon dioxide in order to meet the needs of a future global population of 9 billion.

For more information on climate change and its impact on agriculture, Ziska recommends checking out the website [www.climateandfarming.org](http://www.climateandfarming.org).

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